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Before the
Federal Communications Commission
Washington, D.C. 20554
FCC Docket No. 93-154
PR Docket No. 93-85

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FEDERAL COMMUNICATIONS COMMISSION
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In the Matter of

Amendment of Part 90 of the
Commission's Rules to Finalize
Rules Concerning Automatic
Vehicle Monitoring Systems

) FCC Docket No. 93-141
) PR Docket No. 93-61

FCC - MAIL ROOM

93-61

June 21, 1993

To: The Federal Communications Commission

COMMENTS OF THE TECHNOLOGY RADIO AMATEUR CLUB

- 1 These comments are submitted by the TEchnology Radio Amateur Club, (TERAC). TERAC is located in Beaverton OR, a major technology oriented metropolitan area. TERAC is the prime responder for Washington CO. Emergency Management, is affiliated with the Oregon Trail Chapter of the Red Cross Emergency Services, and supports numerous public service events, such as Artquake, with safety and emergency communications. TERAC members are also very active in experimentation with applications of microwave communications and with new technologies.

2 Summary

~~the FCC~~ ^{TERAC} In this filing ~~the FCC~~ opposes the expansion of objects to be located, and questions the need to enlarge the older and spectrum inefficient AVM technologies. We support Amateur Radio Service sharing of 902-928 and are inclined to be supportive of common carrier authority for AVM. We contend that the intelligent highway has been provided by other technology, and that advanced, spectrum efficient AVM technologies should be employed.

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3 Location of any object similar to previously rejected proposals

While some expansion of the types of objects to be located may be reasonable, the open ended nature of the proposed rules produces undesirable consequences. The proposed changes would create new services, substantially identical to services previously rejected by the Commission, such as the personal locator (PELS). We are further concerned that such an uncontrolled expansion would cause excessive congestion and would be unwieldy to operate, thereby destroying the effectiveness of the service. We are particularly concerned about expanding the rules to encompass location services that are more reasonably provided through other means. We strongly oppose the proposed expansion, which is beyond the intended use of the spectrum, will lead to chaotic conditions in a crowded band.

4 Highway services accomplished more effectively via other means

The need for Highway services suggested by the AVM industry are currently being provided using infrared (IR) and other non-radio frequency technologies. In order to be effective, the intelligent highway system requires instantaneous knowledge of traffic flows throughout the system. This instantaneous knowledge cannot reasonably be provided by locator systems, which must track vehicle locations over time to determine traffic conditions. Traffic volume and flow is more effectively determined by existing embedded roadway vehicle counting systems which can be easily connected via telephone lines or other existing land based communications systems. Such embedded systems for traffic flow monitoring already exist and are unlikely to be abandoned to install a new system which provides less precision.

5 Need already met by existing technology

Demonstration systems using embedded roadway sensing and infrared technology are currently in place and operational in both the United States and Europe. Downloading information to vehicles is easily accomplished via infrared transmission or similar procedures without consuming valuable radio spectrum. The automotive industry has included this technology in production vehicle designs. These vehicle enhancements incorporate a combination of geo-positioning satellites (GPS) and intelligent highway IR technology to direct drivers to the most efficient routes. They adapt dynamically as conditions change and are marketed as a navigation system which can be used in any location world wide. This purported need for AVM intelligent highway services has been supplanted by these technologies.

6 **Supportive of common carrier authority**

We are inclined to be supportive of common carrier authority for AVM systems. We feel this is reasonable authority to allow effective utilization of the technology, provided sufficient safeguards are included to prevent over taxing the crowded 902-928 band.

7 **Advanced technologies more effective**

While we believe there is a need for vehicle locating systems, we are concerned that the technology being advanced in this docket is obsolete and wasteful of spectrum. As stated by the Commission, the wide-band technologies being addressed in this NPRM date from August of 1968, prior to the existence of the GPS system. With the availability of GPS, vehicles may easily report their precise position using narrow bandwidth systems. Such arrangements provide much greater spectrum efficiency and consume smaller bandwidth, thereby allowing larger numbers of vehicles to be monitored. While the passive ranging system does allow for minimal vehicle equipment, the advancement of GPS technology, the declining cost of GPS receivers, and existing computerized navigation equipment in the vehicle render this advantage moot.

8 **2450-2483.5 MHz more appropriate for vehicle tagging**

The passive tagging of cargo trailers (vehicle tagging) is an application in which minimal vehicle equipment remains desirable. We conclude that applications of this type would best be operated in the 2450-2483.5 MHz segment, as has been suggested as a possibility by the Commission. Enhanced antenna directivity at these frequencies will provide improved localization and allow scanning of multiple vehicles in busy urban environments. Improved frequency reuse will allow greater spectrum efficiency.

9 **Sharing**

North American Teletrac and Location Technologies, Inc. has argued that narrow bandwidth systems operating on the same frequencies as wide-band systems cause unacceptable degradation of performance. We suggest that spectrum sharing between wide bandwidth pulse systems and other systems can be accomplished using spread spectrum technologies. The interference potential of shared wide-band systems is much lower than wide-band/narrow-band sharing. Were it to appear that there were difficulties in implementing sharing, fixed point to point sharing of the spectrum utilizing coordination to protect AVM wide-band receivers, is completely feasible.

10 Local Amateur Radio Service coordinators will assist sharing

Coordination to prevent interference is the fundamental purpose of Amateur radio service (ARS) frequency coordinators. Sharing of the 902-928 MHz band by the ARS can be accomplished with the assistance of these coordinators. ARS frequency coordinators are ready and willing to assist the AVM service. Local frequency coordinators are experienced in the propagation characteristics, coverage area and protection requirements in the various geographical areas of the country.

10 Exclusive segment

As a sharing partner in the 902-928 MHz band, the amateur radio service has some needs that can best be satisfied by a small segment allocated exclusively to the amateur service. These activities, such as propagation studies and weak signal work, provide valuable information useful for the advancement of the radio art. We advocate the advancement of the ARS to co-primary status for at least a small segment of 902-928 band to encourage continuation of these activities. Sharing of the remaining segments can be accomplished as outlined above.

11 Capitol investment

We also note that the high capital investments required for wide-band systems will limit their implementation to only the most lucrative metropolitan markets which will make these expensive systems profitable. This suggests the existence of extensive opportunities for sharing of this band by the amateur radio service.

11 Conclusion

For these reasons and other reasons, we suggest the widest possible latitude be provided to the amateur radio service to support spectrum sharing for this band and request the Commission structure the rules to accommodate the ARS needs.

Respectfully submitted,
The TEchnology Radio Amateur Club



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President, TERAC